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Silviculture Specialist's Report

Snowy Range EA

Laramie Ranger District

Medicine Bow-Routt National Forests & Thunder Basin National Grassland

Albany Counties, Wyoming

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INTRODUCTION

The description, location, purpose and need and proposed action for the **Snowy Range Ski Area EA** project can be found in the Notice of Proposed Action for the Project. The silvicultural analysis for this project considers the treed vegetation within the Snowy Range Ski Area permit boundary and the effects of the proposed actions upon the tree vegetation.

Design Criteria

Table 1: Mitigation Measures Required for All Action Alternatives.

#	Mitigation	Why
1	Slash and boles of trees will be less than 24" in depth or remove slash and boles to designated locations for later disposal.	Reduce fire hazard and create more favorable conditions for vegetation growth and tree regeneration.
2	Slash and boles will occupy less than 30% of the treatment area.	Reduce fire hazard and create more favorable conditions for vegetation growth and tree regeneration.

Medicine-Bow National Forest Land Management Plan Direction

Table 2: Summary of the Management Areas

Management Areas		
Designation	**Description**	**Acres Within AA**
8.22	Ski area	526
Total		**526**

Forest-wide Standards and Guidelines

Forest-wide standards and guidelines apply to all areas of the Medicine Bow National Forest. Standards and guidelines are often more general in nature than the desired future conditions (DFC's). Standards are intended to be closely adhered to during implementation, while the guidelines are intended to be more flexible, establishing parameters rather than rigid requirements. (See Forest Plan Chapters 1-3)

Forest-Wide Standards and Guidelines for Vegetation- No Action

The no action alternative is consistent with all Forest-Wide Standards and Guidelines for Vegetation.

Forest-Wide Standards and Guidelines for Vegetation- Final Proposed Action

Standard and Guideline	Forest Plan Direction	Project Summary
Biological Diversity: Siliviculture	When trees are to be harvested on other than suitable lands, exceptions to the 5-year restocking standard are appropriate as documented in project decisions when the harvest meets one of the following criteria: [R2 Desk Guide] a. For permanent openings that serve specific management direction. b. Where provided for in specific management practices and prescriptions. c. Where it is desirable to delay regeneration and crown closure to meet specific desired conditions and management objectives. **(Standard 4, p.1-37)**	The purpose of the project meets the specific management ski area management/ski run delineation. The entire project area is listed as non-suitable timber. The areas will not be managed for tree regeneration. Complies with Forest Plan Standards and Guides.
Biological Diversity: Siliviculture	Timber harvest units will be designed to retain snags and snag recruitments according to Forest Plan Table 1-11. Retained snags and snag recruits are designated as wildlife trees and will be left on site if blown over. **(Standard 5, p. 1-37)**	Table 1-11 of the forest plan states b) When using prescribed fire, and in treatments to reduce fuel in urban interface areas, it will be acceptable that snag retention and snag recruitment standards may not be met. Areas adjacent to treatments will provide abundant snags. This project is entirely within a WUI area. Complies with Forest Plan Standards and Guides.
Biological Diversity: Siliviculture	Final timber harvest units will be designed to retain coarse woody debris well distributed in accordance with the ranges specified in the following table. Unmerchantable trees should be left standing to replace downed wood that is expected to be lost during site preparation treatment or if existing material does not meet the desired tonnage. [Medicine Bow NF] **(Standard 6 p. 1-38)**	Table 1-12 of the forest plan states When using prescribed fire, and in treatments to reduce fuel in urban interface areas, it will be acceptable that coarse woody debris standards may not be met. This project is entirely within a WUI area. Complies with Forest Plan Standards and Guides.
Biological Diversity: Insects and Disease	Use vegetation management practices to meet objectives and reduce risk of insects and disease. Give priority to cover types identified as moderate to high risk. **(Guideline 2, p. 1-50**	All areas within the project are experienced epidemic levels of insect infestation. Slash will be treated to reduce risk of secondary insect infestation. Complies with Forest Plan Standards and Guides.

Management Areas

Desired Future Conditions

Desired Future Conditions (DFC's) describe land management direction intended to accomplish the Goals and Objectives. Descriptions of the management areas can be found in the Medicine Bow National Forest Revised Land and Resource Management Plan chapter 3.

Applicable DFC Direction for Vegetation

MA	Forest Plan Direction	Project Summary
8.22	Use only vegetation management practices necessary to meet specific resource objectives other than wood production. Timber harvest is not scheduled and does not contribute to the allowable sale quantity.	The primary purpose of the project is to facilitate ski area operations.
8.22	Minimize potential for insect infestations and disease outbreaks through vegetation treatments to maintain stands at moderate or lower risk.	This project will remove hazard trees and other dead trees created by bark beetle infestations.

Geographic Areas

Geographic Areas (GA) help recognize interactions between management area prescriptions and monitor the effects of management activities, locally and forest-wide. Aggregation of management area prescriptions to the geographic area level ties land management activities to the landscape scale. GA desired conditions are based on the unique combination of ecological and social processes inherent to the defined area. The direction needed to respond to these unique conditions is provided in the GA desired condition and GA guidelines sections. Application of the management area prescriptions and associated standards and guidelines will move specific portions of each GA towards the desired condition.

North Fork Geographic Area

Applicable DFC Direction for Vegetation

DFC	Forest Plan Direction	Project Summary
	No applicable direction	

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Affected Environment

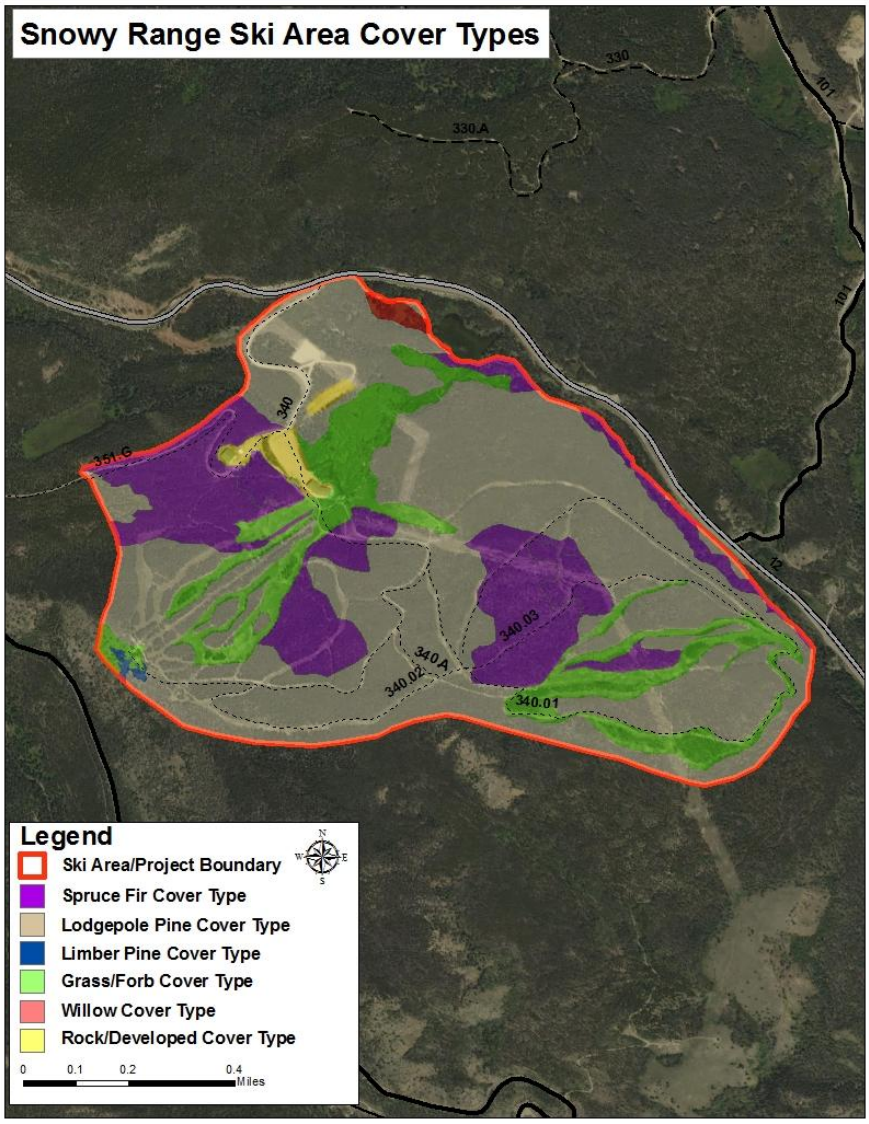
Existing Vegetation

Ranging in elevation from 8,000’ to 9,600’ the Snowy Range Ski Area is predominantly forested with openings created by ski runs, powerline clearing and developed areas. Past disturbances including fire, natural succession, wind throw, insect and disease, and vegetation management are primarily responsible for the vegetation patterns within the project area. Forest vegetation cover types occurring in the project area include lodgepole pine (Pinus contorta), Englemann spruce (Picea engelmannii) and subalpine fir (Abies lasiocarpa), limber pine (Pinus flexilis), grass, forbs, shrubs, and willow (Salix spp.). These plant communities are segregated along gradients of elevation and topography, which directly affect important plant growth determinants such as temperature, effective precipitation and hydrologic regime.

Table 3: Snowy Range Ski Area Existing Cover Types (FSVeg Spatial)

R2 VEG	ALL	Established	Small	Medium	Large	% of A.A.
Forbs/ Grasses	92					8
Rock/Developed	9					1
Willow	8			8		1
Limber pine	29				29	3
Lodgepole pine	767	16	148	474	129	71
Spruce-fir	173		69	49	55	16
1–Established = < 1”dbh, Small = 1-4.9”dbh, Medium = 5-8.9”dbh, Large = 9-15.9”dbh, very large = > 16”dbh						

Map 1: Cover Types Snowy Range Ski Area



Disturbance History

Disturbances are a part of ecosystem processes that forests have adapted to. Short-term changes are dramatic and substantial, but forests will regenerate and thrive again. In the central Rocky Mountain ecosystem, disturbance is the critical factor in maintaining co-existing species. Without disturbance, climax species such as subalpine fir and Engelmann spruce would replace disturbance dependent species such as lodgepole pine and aspen. Three of the more common disturbances are insects and disease, fire and vegetation management.

Insects and disease

Insects and disease are a natural and essential part of the forest ecosystem and are always present at endemic levels. These species often only become a concern for forest managers when they adversely affect forest management objectives. Every ecosystem, forest, and tree species has its interaction with forest pests which forest managers work to mitigate 'damages'. Although there are a multitude of insect and forest diseases present in the project area, some negatively affecting the forest, for this analysis three major damaging agents have been identified to significantly affect the objectives of management within the area. These identified agents are mountain pine beetle (MPB), spruce beetle and dwarf mistletoe.

Bark Beetles

Bark beetles are naturally occurring in ecosystems at endemic levels. These beetles occur in most conifers including limber, lodgepole pine sub alpine fir and spruce. Within the project area bark beetles have caused approximately minimal damage. Mountain pine beetle and spruce beetle are no longer found at epidemic levels within the project area. These beetles are still present and continue to damage trees at small scales. The tree's only defense against beetles is its sap, or resin, which the trees use to "pitch out," attacking beetles (Gibson 2009). Trees that are stressed due to drought, fire, external damage or other forest pests are more readily and successfully attacked by bark beetles. However younger healthier trees that are not stressed can produce more sap thus more effectively protect themselves.

Endemic levels of bark beetles are a natural part of the ecosystem and are naturally regulated through cold winter temperatures and through predation by birds; such as woodpeckers, small mammals, and other insects.

Dwarf Mistletoe

Dwarf mistletoes are parasitic plants that grow on pines and other conifers, slowing and distorting growth and leading to early death. Infection by these plants is the most common and economically damaging forest disease in most of the western states (USDA 2009). Within the project area lodgepole pine is affected and mistletoe infestations have been observed throughout the area. It is generally agreed that a century or more of fire suppression and exclusion has resulted in an increase in the abundance of dwarf mistletoe in many parts of the west (USDA 2009). Witches brooms and increased litter fall can be caused by mistletoe. This can lead to an increase in vertical fuel continuity causing surface fires to transition to stand replacing crown fires (Kipflmueller 1997). Dwarf mistletoes can be managed through different silvicultural practices; the most effective being even aged management and the least effective

uneven aged management.

Fire

The presence of lodgepole pine and aspen at the lower and middle elevations of the AA is reflective of past fire disturbances. Natural and human caused wildfires have been a major factor in forming the forests we see today within the Snowy Range. Large portions of this range burned playing an important role in the appearance of the landscape, and maintaining a mix of tree species in various successional stages. Lower elevations that tend to be drier have a shorter fire return interval, while wetter, higher elevations have a longer fire return interval (Veblen1998).

Examining the fire history or stand origin data for the vicinity; it appears that the majority of the existing stands resulted from fires that burned the area between 1780 and 1900. Since the establishment of the area as a National Forest in 1905, fire has been effectively controlled within the area. The lack of recent fires and/or other natural disturbances since 1900 are reflective in the relatively high amount of stands that are dominated by mature spruce-fir and mature lodgepole pine. (Dillon 2005)

Several small fires have occurred close to the analysis area with the past 10 years. These fires have ranged in size form tens of acres to individual trees.

Vegetation Management

For the purposes of this analysis vegetation management will be described as alteration of woody vegetation for purposes of timber harvest, fuels reduction and hazard tree removal. Vegetation management in the analysis area has mainly been focused on ski area management; creation of ski runs, parking areas, building development and removal of hazard trees from around ski runs and developed areas.

Environmental Consequences _____

The effects of the No Action and the Action alternatives are very similar for the timber resource due to the minimal amount of trees to be removed. The biggest difference of the action alternative and the no action alternative to the timber resource is the treatment of slash and boles. The No Action alternative would treat hazard trees along ski area infrastructure where the action alternative would remove more trees, including live trees, within clearing areas need for ski are improvements. The Action alternative would require disposal of slash through burning which would most likely be accomplished using Forest Service force account personnel or scattering of slash to less than 24 inch depth over less than 30 percent of the treatment area.

The minimal amount of treed vegetation that will be removed during the proposed action in conjunction with the effects of the actions in the cumulative effects list (page 11 of the FONSI) will result in a negligible to minimal cumulative effect to treed vegetation.

Determination of Effects and Rationale for both alternatives

No detrimental effects are associated with the alternatives.

Monitoring Requirements

- Monitor slash and bole removal.

LITERATURE CITED

The analysis conducted is based on the best available science, as illustrated by the following references

Dillon, Gregory K.; Knight, Dennis H.; and Meyer, Carolyn B. 2005. Historic Range of Variability for Upland Vegetation in the medicine Bow National Forest Wyoming. General Technical Report RMRS-GTR-139. Rocky Mountain Research Station.

Gibson, Ken; Kegley, Sandy; Bentz, Barbara. 2009. Mountain Pine Beetle. Forest Service Insect and Disease Leaflet 2. U.S. Department of Agriculture. Forest Service.

Kipfmueller, Kurt F; Baker, William L. 1997. Fires and Dwarf Mistletoe in a Rocky Mountain Lodgepole Pine Ecosystem. Forest and Ecology Management. December 1997

USDA Forest Service. 2009. Major Forest Insect and Disease Conditions in the United States 2007. Forest Service Publication FS-919. http://www.fs.fed.us/foresthealth/management/fhm-conditions.shtml

Veblen, Thomas. T. 1998. Disturbance Patterns in Southern Rocky Mountain Forests. Department of Geology. University of Colorado.

Silvicultural Findings of Compliance with Laws, Regulations, and Policy

The following findings are made based on the environmental analysis and the proposed silvicultural treatments:

Consistency [36 CFR 219.8(e)]:

1. Timber harvest would occur on lands suited for timber production or would occur in areas where timber harvest is permitted and is necessary to help achieve other resource management objectives; and

The removal of timber associate with this project is for purposes of ski area management. The removal is within areas designated as not suitable for timber production.

2. Silvicultural treatments are consistent with the Forest Plan.

Treatments are consistent with the Forest Plan as they are for the creation of permanent openings associated with ski area management.

Timber Harvest [16 U.S.C. 1604 (g)(3)(E)]:

1. Soil, slope, or other watershed conditions will not be irreversibly damaged;

Reference Watershed Specialist Report and Assessment of the Soil Resource report for this project.

2. *There is assurance that the lands can be adequately restocked within five years after final regeneration harvest;*

Stands are exempt from NFMA restocking as the management is for creation of permanent openings for ski area management.

3. *Streams, streambanks, shorelines, lakes, wetlands, and other bodies of water are protected from detrimental changes in water temperatures, blockages of water courses, and deposits of sediment where harvests are likely to seriously and adversely affect water conditions or fish habitat; and*

Reference the Watershed Specialist Report and Fisheries, Amphibians and Aquatic Habitat Specialist Report for the project.

4. *The harvesting system to be used was not selected primarily because it will give the greatest dollar return or the greatest unit output of timber.*

Even-aged Regeneration Harvests [16 U.S.C. 1604 (g)(3)(F)]:

1. For clearcutting, it is the optimum method;

Clearcutting is proposed to realign ski area runs to create permanent openings.

2. Clearcuts, coppice cuts, seed tree, and shelterwood regeneration harvests are appropriate to meeting the objectives and requirements of the Forest Plan;

Silvicultural systems proposed for this project are consistent with the Forest Plan (#2 above)

3. An interdisciplinary review was completed and the potential environmental, biological, aesthetic, engineering, and economic impacts were assessed and the cutting methods are consistent with the multiple use of the project area;

An environmental assessment was completed for this project.

4. Cut blocks, patches, or strips are shaped and blended to the extent practicable with the natural terrain;

The design of the treatment units will follow and expand existing openings along ski runs.

5. Even-aged regeneration harvests made in one operation meet the 40-acre maximum size limit requirement; and

Treatment units will be smaller than 40 acres.

6. Harvest will be consistent with the protection of soil, watershed, fish, wildlife, recreation, esthetic resources, cultural and historic resources, and the regeneration of timber resources.

Reference Watershed Specialist Report; Fisheries, Amphibians and Aquatic Habitat Specialist Report; Wildlife Specialist Report for Terrestrial Wildlife Resources; Recreation, Lands, Special Uses and Wilderness Input; Heritage Resource Specialist Report; and the Silviculture Specialist's Report.

Culmination of Mean Annual Increment [16 U.S.C. 1604 (m)]:

Stands of trees harvested have generally reached the culmination of mean annual increment of growth (CMAI).

Stand may not have met CMAI. The tree removal associated with this project is for the purposes of ski area management.

Findings prepared by: Tim Douville Date:

Findings recommended by:_____ Date:
(Certified silviculturist)
Findings accepted by:_____ Date:
(line officer)